DOCUMENT RESUME

ED 225 519 HE 015 881

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TITLE Is Medical Student Writing Wrong?
PUB DATE [82]
NOTE 13p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Descriptive Writing; *Error Analysis (Language); *Grammar; Higher Education; *Medical Students; *Punctuation; *Spelling; Student Evaluation; Writing (Composition); *Writing Skills; Written Language

ABSTRACT

The prevalence of writing errors made by third-year medical students from the class of 1981 at a large midwestern medical school was studied. The papers of 253 students taking family medicine were evaluated for spelling, grammar, and punctuation errors. Four types of grammar errors and seven punctuation errors were analyzed, and each word misspelled was counted only once, even if it appeared several times. Spelling errors were found in 184 papers (73 percent), averaging 3.68 misspellings per paper, while grammar errors occurred in 75 papers (30 percent), averaging 2.16 per paper. Punctuation errors were discovered in 153 papers (60 percent), with 3.5 errors on average. Only 14 percent of the papers had no errors. Fifty-five percent had errors in more than one category, and 23 percent had errors in all three categories. It is concluded that more than half of the medical students had problems with written English, and nearly one quarter committed simple errors in spelling, grammar, and punctuation. Of the nine words most commonly misspelled, only one was a technical medical word. It is recommended that serious consideration be given by medical faculties to reintroducing formal written papers in the medical school curriculum. (SW)

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IS MEDICAL STUDENT WRITING WRONG?

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HE 015 881

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ABSTRACT

In contradistinction to other forms of graduate education, medical schools place little emphasis on teaching or reinforcing clear written expression. In order to determine the prevalence of writing errors, the authors reviewed one paper submitted by each of the members of the Class of 1981 at a large midwestern medical school. We counted the frequency of certain basic errors in spelling, grammar and punctuation. Of the 253 papers studied, only 14% had no errors. Fifty-five percent had errors in more than one category; 23 percent had errors in all three categories, averaging 12.2 errors per paper. Of the 9 words most commonly misspelled, only one was a technical medical word. The authors conclude that a significant minority of medical students have major problems in written communication. We recommend that serious consideration be given by medical faculties to reintroducing formal written papers in the medical school curriculum.

The use of language is central to the practice of medicine. Clarity of thought and expression are essential for successful communication with patients and colleagues.

The general deterioration in language ability in America, particularly among elementary and high school students, has generated much public debate over the last decade. The 49 point decline in Verbal Scores on the Scholastic Aptitude Test between 1962, and 1977[1] has encouraged a back to basics movement in primary and secondary education. Less public attention has been paid to the language skills of professional students. In the legal profession, concerns about graduates' inability to write clearly have led to the inclusion of a brief written essay as part of the most recent revision of the L.S.A.T. (Law School Admission Test).

A number of medical authors have expressed their concerns lately about problems in communication in the medical profession.[2,3] The quality of writing in medical journals has come under special scrutiny [3,4] and a number of manuals have recently been produced to help the physician - author to improve his or her ability to communicate clearly.[5] Outside of one article reporting on medical students' ability to recognize common writing faults,[6] we have been unable to find any recent medical literature on medical student writing. Observation of frequent grammatical and spelling errors in patient write-ups and other medical school papers prompted this brief report.

METHODOLOGY

During their third year Family Medicine Rotation, students of the class of 1981 at a large midwestern medical school were

required to turn in two brief written projects which counted for 25% of their grade for the rotation. The projects fell in three categories: a family genogram, a description and critique of the preceptor's office management, or a report on an elective area. We arbitrarily chose one of the two projects submitted by each of the students taking family medicine that year, n=253.

Finding an appropriate methodology with which to score the papers proved difficult. Assessment and evaluation of the writing of large groups of students in college composition programs tend to be done in a holistic manner, with each student's work being compared with "model" papers. A number of methods for scaling papers - such as essay scales, analytic scales and dichotomous scales - have been developed to improve interrater reliability.[7] Nonetheless, using any of these methods, the individual student's paper is still compared to a standard in order to determine the grade.

Since the literature does not report standards for medical student writing, we were forced to utilize the simpler method of frequency of error count. Consulting a book entitled First Year College English Workbook, a standard grammar text, we chose to look only for errors whose presence or absence are unequivocal, in order to avoid stylistic issues in the determination of error.

After a small pilot study, we chose to examine errors in three categories: spelling, grammar, and punctuation. One author read each selected paper; the spelling errors he noted were confirmed by the second author. Each word misspelled was counted only once, even if it appeared several times. (One

student wrote "docter" 14 times.) Errors which appeared to be typographical were not counted.

Four errors in grammar were selected:

1. Lack of agreement in number between subject and verb, e.g. "The detailes (sic) of record and billing procedure is described later."
2. Lack of agreement in number between a pronoun and its antecedent, e.g. "If a person has no insurance they will pay by check, cash or credit card."
3. Mistaken pronoun case (subjective or objective), e.g. "Her and her husband lived alone in Walled Lake."
4. The presence of sentence or clause fragments, e.g. "Child abuse is growing problem; even away from the urban areas."

Seven punctuation errors were selected for study.

1. Inappropriate presence of a comma between subject and verb, e.g. "I will identify several of the programs available, and will comment about each."
2. Improper punctuation before a coordinating conjunction (and, but, yet, nor), e.g. "Most people realize that smoking is destructive to health yet they do it anyways."
3. Improper punctuation before a conjunctive adverb (however, nevertheless), e.g. "These practices could be performed by the family practitioner however receiving these services elsewhere does not detract from good patient management."

4. Absence of commas around parenthetical material, e.g. "For the smoking physician of course he must follow his own advise (sic) and be a model for his patients."
5. Improper placement of a comma before a dependent phrase, e.g. "John obviously desires this thing to end, because of all the embarrassment but also to put his parents at ease."
6. Absence of a comma after an introductory clause, e.g "Since the female heterzygous (sic) for the variant is a genetic mosaic she will have a population of ..."
7. Improper presence or absence of an apostrophe, e.g. "Patients temperature," "doctors salaries."

All the above examples are from the papers reviewed for this study.

We recognize that error count methodology does not fully measure the stylistic problems evidenced by the papers. Many examples of infelicitous phraseology, resulting in language whose meaning was difficult to construe, did not fall into our categories. Misplaced modifiers were common. Some examples of awkward syntax follow: "Shooting through the wall with a shotgun was another example of his character." "Mr. J. O. is approaching the age his father died (47), who additionally had a cirrhotic liver combined with his development of cataracts bilaterally in the last two years." "Dr. X also sees patients after office hours that are in the hospital." "The office has the dates of Pap Smears performed in green ink on the corner of the family file so that a glance is enough to determine if a proper schedule is being followed."

RESULTS

The average number of words in the 253 papers reviewed was 1109, with a 200-5000 range.

One hundred eighty-four papers (73%) had spelling errors, averaging 3.68 misspellings per paper. Seventy-five papers (30%) had grammar errors, averaging 2.16 per paper. Punctuation errors were discovered in 153 papers (60%), with 3.5 errors on average.

Only 14% of the papers had no errors. Thirty percent of the papers had errors in only one of the three categories-spelling, grammar, or punctuation. These papers averaged 2.04 errors each. Thirty-three percent of the papers had errors in two categories, averaging 6.16 errors apiece. Errors in spelling, grammar and punctuation were found in 23% of the papers. The papers in this group averaged 12.21 errors each. (Table 1) These papers had a mean length of 1317 words, indicating that increased size was not the major reason for the larger number of errors.

The nine words most commonly misspelled were: receive (by 15 authors), examining (10), accommodate (10), occurrence (8), practitioner (8), separate (7), privileges (7), ophthalmoscope (7).

DISCUSSION

Our data indicates that more than half of the medical students in this class have problems with written English. Nearly one quarter of the students committed simple errors in spelling, grammar and punctuation. We wish to emphasize that on objective examinations this medical school class is typical of American medical students, since it scored slightly above average on Parts I and II of the National Boards.

The purpose of writing is clear communication, and syntax and spelling are but a means to that end. While this study did not directly measure comprehensibility of written communication, proper syntax and spelling do play major roles in determining clarity and can, we feel, legitimately be substituted for direct measures of clarity in survey studies such as this one.

The opportunities and requirements for writing in medical school have atrophied over the last two decades. During the basic science years more and more student bodies provide note services, relieving many students of the need to write out their own notes. Student write-ups of patients are rarely reviewed by anyone other than busy house officers whose primary responsibility is patient care. Legal challenges and other trends such as larger classes have caused more and more medical schools to rely exclusively on multiple choice instruments to grade students.[8]

Reviewing the titles in The Journal of Medical Education over the past 5 years, we could find only 2 articles in which writing played a central role in a curricular experience.[6,9]

Is skill in writing really necessary for the practice of medicine? Many students think not. They argue that since their writing after graduation will be limited to brief chart notations and prescriptions, formal writing during medical school is of no value.

Many other graduate and professional programs require scholarly papers even though writing is not a significant component of later professional activities. For graduate students, writing has intrinsic value as an intellectual exercise. Stu-

dents need not only the passive ability to recall facts, as measured by multiple choice questions, but also the active ability to organize facts and concepts into coherent tightly reasoned statements, which can be evaluated only by review of formal presentations.

Clear expression is a central component of good medical practice. As Cassell forcefully argues, intuitively acquired language skills do not guarantee the student the ability to use language effectively in the special setting of medicine.[10] Formal writing forces the author to choose words and phrases carefully. The attention to detail, which is of much greater importance in written than oral presentations, can play an important role in sharpening the student's understanding of medical material.

Medical schools cannot get into the business of teaching remedial composition.. But if medical educators commit themselves to improving clarity of expression through written papers, the ripple effect through the premedical years would result in applicants with more skills in writing. As long as medical students are evaluated almost exclusively on their ability to memorize a body of knowledge, rather than to express or apply it, communication problems will remain commonplace in medicine.

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TABLE 1

TOTAL WRITING ERRORS (GRAMMAR, PUNCTUATION, SPELLING.)

	% OF PAPERS (N=253)	MEAN ERRORS/PAPER
ERRORS IN NO CATEGORIES	14%	0
ERRORS IN ONE CATEGORY	30%	2.04
ERRORS IN TWO CATEGORIES	33%	6.16
ERRORS IN THREE CATEGORIES	23%	12.21